AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

1. (Currently amended) A physical quantity detection device comprising:

an operational amplifier;

a first resistor connected between an inverting input of said operational amplifier and a first reference potential;

a second resistor connected between said inverting input of said operational amplifier and a second reference potential, said first and second resistors having a first temperature coefficient of resistance;

f26

a feedback resistor being connected between said inverting input of said operational amplifier and an output of said operational amplifier and having a second temperature coefficient of resistance ~~resistor~~; and

a reference voltage generation circuit generating a reference voltage supplied to a non-inverting input of said operational amplifier, at least one of said first and second resistors comprising a sensing element of which resistance ~~varying~~ varies on the basis of a physical quantity with a temperature coefficient of sensitivity, wherein a difference between said first temperature coefficient of resistance and said temperature coefficient of sensitivity ~~being~~ is substantially equal to said second temperature coefficient of resistance, and wherein said reference voltage generation circuit includes third and fourth resistors connected in series between said first and second reference potentials to generate a divided voltage as said reference voltage, and wherein a temperature coefficient of resistance of said third resistor is substantially equal to a temperature coefficient of resistance of said fourth resistor so that said reference voltage can be kept constant irrespective of temperature variation.

2. (Currently amended) The physical quantity detection device as claimed in claim 1, wherein each of said first and second resistors and said feedback resistor comprises a diffused resistor~~,~~ and a concentration of impurity of said feedback resistor is different from concentrations of impurity of said first and second resistors.

3. (Original) The physical quantity detection device as claimed in claim 2, wherein said concentrations of impurity of said first and second resistors are from $0.4 \times 10^{19}\,cm^{-3}$ to $8 \times 10^{19}\,cm^{-3}$ and said concentration of impurity of said feedback resistor is from $1.6 \times 10^{17}\,cm^{-3}$ to $7 \times 10^{17}\,cm^{-3}$.

A26 Con't

4. (Original) The physical quantity detection device as claimed in claim 1, wherein one of said first and second resistors comprises said sensing element of which resistance varies on the basis of said physical quantity, and a resistance of the other of said first and second resistors remains constant with respect to said physical quantity.

Please cancel claim 5 without prejudice.

5. (Canceled)

6. (Currently amended) The physical quantity detection device as claimed in claim ~~5~~ 1, wherein one of said third and fourth resistors has a trimming structure to trim said reference voltage toward an output voltage of said operational amplifier on when said physical quantity is zero.

7. (Original) The physical quantity detection device as claimed in claim 1, further comprising a resistor having a trimming structure is connected in parallel with said feedback resistor.

8. (Currently amended) The physical quantity detection device as claimed in claim 1, further comprising:

a third resistor;

another operational amplifier having an inverting input supplied with an output of said operational amplifier through said third resistor, a non-inverting input of said another operational amplifier being supplied with said reference voltage; and

B26 Con't

a fourth resistor disposed between an output terminal and inverting input of said another operational ~~amplifer~~ amplifier.

9. (Original) The physical quantity detection device as claimed in claim 8, further comprising an offset trimming resistor between said first reference potential and said inverting input of said another operational amplifier.

10. (Original) The physical quantity detection device as claimed in claim 8, further comprising an offset trimming resistor between said second reference potential and said inverting input of said another operational amplifier.

11. (Original) The physical quantity detection device as claimed in claim 8, further comprising:

fifth and sixth resistors connected between said first reference potential and said inverting input of said second operational amplifier;

seventh and eighth resistors connected between said inverting input of said another operational amplifier and said second reference potential, wherein said sixth and seventh resistors have temperature dependencies of resistance.

12. (Original) The physical quantity detection device as claimed in claim 11, wherein at least one of said fifth and eighth resistors has a trimming structure for compensating a temperature characteristic of offset of the output of said another operational amplifier.

A26 Con't

13. (Currently amended) <u>A</u> ~~The~~ physical quantity detection device ~~as claimed in claim 1~~ <u>comprising:</u>

<u>an operational amplifier;</u>

<u>a first resistor connected between an inverting input of said operational amplifier and a first reference potential;</u>

<u>a second resistor connected between said inverting input of said operational amplifier and a second reference potential, said first and second resistors having a first temperature coefficient of resistance;</u>

<u>a feedback resistor being connected between said inverting input of said operational amplifier and an output of said operational amplifier and having a second temperature coefficient of resistance; and</u>

<u>a reference voltage generation circuit generating a reference voltage supplied to a non-inverting input of said operational amplifier, at least one of said first and second resistors</u>

comprising a sensing element of which resistance varies on the basis of a physical quantity with a temperature coefficient of sensitivity, wherein a difference between said first temperature coefficient of resistance and said temperature coefficient of sensitivity is substantially equal to said second temperature coefficient of resistance, wherein if it is assumed that a sensitivity of said sensing element at a reference temperature is S0, a resistance of said sensing element at said reference temperature is R0, and a resistance of said feedback resistor at said reference temperature is Rts0, then, it is represented that said sensitivity of said sensing element at a temperature t which is different from said reference temperature by T is S(T), said resistance of said sensing element at t is R(T), and said resistance of said feedback resistor at t is Rts(T), and S(T), R(T), and Rts(T) are further represented by:

A26 con't

$S(T) = S0 \cdot (1 + \beta1 \cdot T + \beta2 \cdot T^2)$, $R(T) = R0 \cdot (1 + \alpha1 \cdot T + \alpha2 \cdot T^2)$, and $Rts(T) = Rts0 \cdot (1 + A1 \cdot T + A2 \cdot T^2)$, where said $\alpha1$, $\alpha2$, $\beta1$, $\beta2$, A1~~,~~ and A2 are temperature coefficients, and wherein said $\alpha1$, $\alpha2$, $\beta1$, $\beta2$, A1~~,~~ and A2 are determined so as to establish both $A1 = \alpha1 - \beta1$ and $A2 = \alpha2 - \beta2 - \beta1 \cdot (\alpha1 - \beta1)$.

14. (Original) The physical quantity detection device as claimed in claim 1, wherein said reference voltage is determined such that said almost all of a current flowing through said first resistor flows into said second resistor.

15. (Currently amended) A physical quantity detection device comprising: an operational amplifier;

a first resistor connected between an inverting input of said operational amplifier and a first reference potential;

a second resistor connected between said inverting input of said operational amplifier and a second reference potential, said first and second resistors having a first temperature coefficient of resistance;

a feedback resistor being connected between said inverting input of said operational amplifier and an output of said operational amplifier and having a second temperature coefficient of resistor; and

a reference voltage generation circuit generating a reference voltage supplied to a non-inverting input of said operational amplifier, at least one of said first and second resistors comprising a sensing element of which resistance ~~varying~~ varies on the basis of a physical quantity with a temperature coefficient of sensitivity, wherein said reference voltage generation circuit includes a third and fourth resistors connected in series between said first and second reference potentials and generates a divided voltage as said reference voltage, and a temperature coefficient of said third resistor is substantially equal to a temperature coefficient of said fourth resistor.

f. 26 FL con't

16. (Currently amended) A physical quantity detection device comprising:

an operational amplifier;

a first resistor connected between an inverting input of said operational amplifier and a first reference potential;

a second resistor connected between said inverting input of said operational amplifier and a second reference potential, said first and second resistors having a first temperature coefficient of resistance;

a feedback resistor being connected between said inverting input of said operational

amplifier and an output of said operational amplifier and having a second temperature coefficient of ~~resistor~~ resistance;

a reference voltage generation circuit generating a reference voltage supplied to a non-inverting input of said operational amplifier, at least one of said first and second resistors comprising a sensing element of which resistance ~~varying~~ varies on the basis of a physical quantity with a temperature coefficient of sensitivity,

a third resistor;

another operational amplifier, an inverting input of said another operational amplifier being supplied with an output of said operational amplifier through said third resistor, a non-inverting input of said another operational amplifier being supplied with said reference voltage; and

A26 cont

a fourth resistor disposed between an output terminal and inverting input of said another operational ~~amplifer~~ amplifier.

17. (Original) The physical quantity detection device as claimed in claim 3, wherein said concentrations of impurity of said first and second resistors are from $0.8\times10^{19}\,cm^{-3}$ to $4\times10^{19}\,cm^{-3}$ and said concentration of impurity of said feedback resistor is from $2.5\times10^{17}\,cm^{-3}$ to $5.5\times10^{17}\,cm^{-3}$.

18. (Original) The physical quantity detection device as claimed in claim 17, wherein said concentrations of impurity of said first and second resistors are about $1\times10^{19}\,cm^{-3}$, and said concentration of impurity of said feedback resistor is about $4\times10^{17}\,cm^{-3}$.

19. (Newly added) A physical quantity detection device comprising: an operational amplifier;

a first resistor connected between an inverting input of said operational amplifier and a first reference potential;

a second resistor connected between said inverting input of said operational amplifier and a second reference potential, said first and second resistors having a first temperature coefficient of resistance;

a feedback resistor being connected between said inverting input of said operational amplifier and an output of said operational amplifier and having a second temperature coefficient of resistance; and

A26 Con't

a reference voltage generation circuit connected between said first and second reference potentials for generating a reference voltage directly supplied to a non-inverting input of said operational amplifier, at least one of said first and second resistors comprising a sensing element of which resistance varies on the basis of a physical quantity with a temperature coefficient of sensitivity, wherein a difference between said first temperature coefficient of resistance and said temperature coefficient of sensitivity is substantially equal to said second temperature coefficient of resistance.

20. (Newly added) The physical quantity detection device as claimed in claim 19, wherein said reference voltage generation circuit includes third and fourth resistors connected in series between said first and second reference potentials to generate a divided voltage as said reference voltage.

#26 Cont

21. (Newly added) The physical quantity detection device as claimed in claim 20, wherein a temperature coefficient of resistance of said third resistor is substantially equal to a temperature coefficient of resistance of said fourth resistor so that said reference voltage can be kept constant irrespective of temperature variation.